

What is claimed is:

1. A system for interlocking a plurality of portable medical devices in a side-by-side relationship, the system comprising:  
5 the plurality of medical devices including a first medical device and a second medical device;

the first medical device including a housing having opposite sides, at least one of the opposite sides including a matable element;

10 the second medical device including a housing having opposite sides, at least one of the opposite sides of the housing of the second medical device including a matable element for detachably interconnecting to the matable element of the first medical device and attaching the first and  
15 second medical devices; and

wherein at least one of the medical devices includes a selective means for restricting the attachment of the second medical device to only one of the opposite sides of the first medical device housing.

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2. The system of claim 1, wherein the at least one of the medical devices is provided with only a single matable element, constituting the selective means.

25 3. The system of claim 1, wherein the first medical device is provided with two matable elements, one matable element being located on each of the opposite sides of the first medical device housing.

30 4. The system of claim 3, wherein the selective means includes a locking element which restricts attachment of the second medical device to the first medical device to only one of the opposite sides of the first medical device once the first medical device is attached to a support member.

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5. The system of claim 4, wherein the first medical device includes a clamp mechanism for mounting at least one medical device to a support member.

5 6. The system of claim 5, wherein the clamp mechanism has a hole therein for slidably receiving the locking element, the locking element adapted to apply force on a component of the medical device when the clamp body is affixed to a support member.

10 7. The system of claim 5, wherein the clamp mechanism has a slide-ratcheting means for permitting a user to close the clamp mechanism about the support member by application of linear force to the clamp mechanism.

15 8. The system of claim 1, wherein at least one of the medical devices includes a blocking means for preventing a third medical device from attaching to either the first or second medical devices once the first and second medical devices are attached.

20 9. The system of claim 1, wherein at least one of the medical devices includes a latch element which detachably locks the first and second medical devices together once the first and second medical devices are attached.

25 10. The system of claim 9, wherein a release element is operatively associated with the latch element, the release element permitting a user to selectively disengage the latch element.

30 11. The system of claim 9, wherein the first medical device includes the latch element, the first medical device is provided with two matable elements where one matable element is located on each of the opposite sides of the first medical device housing, and wherein the latch element extends from the first medical device housing side that is not adjacent the

attached second medical device and is secured in a position which prevents a third medical device from being added to the first medical device once the first and second medical devices are attached.

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12. The system of claim 1, wherein the first and second medical devices each include a transceiver, the transceivers being aligned for communication between the medical devices once the first and second medical devices are attached.

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13. A system for interlocking a plurality of portable medical devices in a side-by-side relationship, the system comprising: the plurality of medical devices including a first medical device and a second medical device;

15 the first medical device including a housing having opposite sides, at least one of the opposite sides including a matable element;

the second medical device including a housing having opposite sides, at least one of the opposite sides of the housing of the second medical device including a matable element for detachably interconnecting to the matable element on the first medical device housing and attaching the first and second medical devices; and

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wherein at least one of the medical devices includes a blocking means for preventing a third medical device from attaching to either the first or second medical device once the first and second medical devices are attached.

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14. The system of claim 13, wherein the at least one of the medical devices is provided with only a single matable element, constituting the blocking means.

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15. The system of claim 13, wherein the first medical device is provided with two matable elements, a first matable element being located on one of the first medical device housing sides and a second matable element being located on the first medical device housing opposite side.

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16. The system of claim 15, wherein the blocking means includes a blocking element associated with the first medical device which blocks attachment of a third medical device to the first medical device once the first and second medical devices are attached.

17. The system of claim 13, wherein at least one of the medical devices includes a latch element which detachably locks the first and second medical devices together once the first and second medical devices are attached.

18. The system of claim 17, wherein a release element is operatively associated with the latch element, the release element permitting a user to selectively disengage the latch element.

19. The system of claim 17, wherein the first medical device includes the latch element, the first medical device is provided with two matable elements where one matable element is located on each of the first medical device housing opposite sides, and wherein the blocking means includes the latch element which extends from the first medical housing side that is not adjacent the attached second medical device, the latch element being secured in a position which prevents a third medical device from being added to the first medical device once the first and second medical devices are attached.

20. The system of claim 13, wherein the first and second medical devices each include a transceiver, the transceivers being aligned for communication between the medical devices once the first and second medical devices are attached.

21. A clamp mechanism for mounting a medical device to a support member, comprising:  
a clamp body defining a first jaw, a second jaw and an opening therebetween adapted to receive a support member;

a clamp shaft including a forward end for extending into the opening, a rearward end, and an intermediate portion having a longitudinal axis and being mounted for axial movement on the first jaw of the clamp body;

5 ratchet and pawl means operatively interposed between the intermediate portion of the clamp shaft and the clamp body, the ratchet and pawl means comprising ratchet teeth and a pawl;

10 biasing means for yieldingly urging the pawl and ratchet teeth into engagement with a biasing force; and

the biasing means, the ratchet teeth, and the pawl being configured and arranged to normally resist axial movement of the clamp shaft in a direction away from the opening and, upon application of an axial force to the clamp shaft sufficient to overcome the biasing force of the  
15 biasing means, to permit slide-ratcheting axial movement of the clamp shaft in a direction toward the opening.

22. A clamp mechanism in accordance with claim 21, wherein  
20 the clamp body has a hole therein for slidably receiving a locking element, the locking element adapted to apply force on a component of the medical device when the clamp body is affixed to a support member.

23. A clamp mechanism in accordance with claim 21, wherein  
25 the first jaw and the second jaw are stationary.

24. A clamp mechanism in accordance with claim 21, wherein  
30 the first jaw of the clamp body has a clamp shaft receiving bore therein for slidably receiving the clamp shaft.

25. A clamp mechanism in accordance with claim 21, wherein  
the ratchet teeth are external threads formed on the intermediate portion of the clamp shaft, and wherein the  
35 threads have a forward lead flank and a rear load flank, the leading flank extending rearward to form an acute angle with a longitudinal axis of the clamp shaft and the load flank

extending perpendicular to the longitudinal axis of the clamp shaft.

- 5 26. A clamp mechanism in accordance with claim 21, further comprising a release mechanism for overcoming the biasing force of the biasing means and disengaging the pawl and ratchet teeth, thereby permitting axial movement of the clamp shaft in the direction away from the opening.
- 10 27. A clamp mechanism in accordance with claim 26, wherein the release mechanism and the pawl means are a unitary body.
- 15 28. A clamp mechanism in accordance with claim 26, wherein the first jaw has a release bore therein and the release mechanism is an elongated pin slidably mounted in the release bore.
- 20 29. A clamp mechanism in accordance with claim 26, wherein the release mechanism has an adjustment slot extending therethrough for receiving the clamp shaft, the ratchet portion of the clamp shaft having threads with a major diameter and the adjustment slot having a length greater than the major diameter of the threads on the clamp shaft, the pawl being a portion of a wall of the adjustment slot having a thread thereon for matingly engaging the ratchet portion of the clamp shaft.
- 25 30. A clamp mechanism in accordance with claim 21, further comprising a hand knob attached to the second end of the clamp shaft.
- 30 31. A clamp mechanism in accordance with claim 30, further comprising a clutch mechanism operatively interposed between the hand knob and the clamp shaft, the clutch mechanism being adapted to prevent overtightening of the clamp shaft against a pole beyond a given torque value.
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32. A clamp mechanism in accordance with claim 21, wherein the clamp mechanism is adapted to be rotatably associated with the medical device.

5 33. A clamp mechanism in accordance with claim 32, wherein the clamp mechanism includes a pivot latch adapted to selectively lock the clamp mechanism in a select one of a plurality of rotational positions with respect to the medical device.

10 34. A first portable medical device adapted for use in an interlocking system for interlocking the first medical device to a second medical device in a side-by-side relationship, the first medical device comprising:

15 a housing having opposite sides, at least one of the opposite sides including a matable element adapted to detachably interconnect a second medical device to the first medical device; and

20 a selective means for restricting the attachment of the second medical device to only one of the opposite sides of the first medical device housing.

25 35. The medical device of claim 34, wherein the first medical device is provided with only a single matable element, constituting the selective means.

30 36. The medical device of claim 35, further comprising a pump mechanism located opposite the single matable element on the housing.

37. The medical device of claim 34, wherein the first medical device is provided with two matable elements, one matable element being located on each of the housing opposite sides.

35 38. The medical device of claim 37, further comprising two pump mechanisms, one pump mechanism being located on each of the housing opposite sides.

39. The medical device of claim 37, wherein the selective means includes a locking element which restricts attachment of the second medical device to the first medical device to only one of the opposite sides of the first medical device once the first medical device is attached to a support member.

40. The medical device of claim 39, wherein the first medical device includes a clamp mechanism for mounting at least one medical device to a support member.

41. The medical device of claim 40, wherein the clamp mechanism has a hole therein for slidably receiving the locking element, the locking element adapted to apply force on a component of the first medical device when the clamp body is affixed to a support member.

42. The medical device of claim 40, wherein the clamp mechanism has a slide-ratcheting means for permitting a user to close the clamp mechanism about the support member by application of linear force to the clamp mechanism.

43. The medical device of claim 34, wherein the first medical device includes a blocking means for preventing a third medical device from attaching to either the first or second medical devices once the first and second medical devices are attached.

44. The medical device of claim 34, wherein the first medical device includes a latch element which detachably locks the first and second medical devices together once the first and second medical devices are attached.

45. The medical device of claim 44, wherein a release element is operatively associated with the latch element, the release element permitting a user to selectively disengage the latch element.



46. The medical device of claim 44, wherein the first medical device includes the latch element, the first medical device is provided with two matable elements where one matable element  
5 is located on each of the first medical device housing opposite sides, and wherein the latch element extends from the first medical device housing side that is not adjacent the attached second medical device and is secured in a position which prevents a third medical device from being added to the  
10 first medical device once the first and second medical devices are attached.

47. The medical device of claim 34, wherein the first medical device includes a transceiver, the transceiver being adapted  
15 to communicate with a corresponding transceiver on the second medical device, the transceiver and corresponding transceiver being aligned for communication between the medical devices once the first and second medical devices are attached.

48. A first portable medical device adapted for use in an interlocking system for interlocking the first medical device to a second medical device in a side-by-side relationship, the first medical device comprising:

20 a housing having opposite sides, at least one of the opposite  
25 sides including a matable element adapted to detachably interconnect a second medical device to the first medical device; and

a blocking means for preventing a third medical device from attaching to the first medical device once the first and  
30 second medical devices are attached.

49. The medical device of claim 48, wherein the first medical device is provided with only a single matable element, constituting the blocking means.

50. The medical device of claim 49, further comprising a pump mechanism located opposite the single matable element on the housing.

5 51. The medical device of claim 48, wherein the first medical device is provided with two matable elements, one matable element being located on each of the opposite sides of the first medical device housing.

10 52. The medical device of claim 51, further comprising two pump mechanisms, one pump mechanism being located on each of the first medical device housing opposite sides.

15 53. The medical device of claim 51, wherein the blocking means includes a blocking element associated with the first medical device which blocks attachment of a third medical device to the first medical device once the first and second medical devices are attached.

20 54. The medical device of claim 51, wherein the first medical device includes a latch element which detachably locks the first and second medical devices together once the first and second medical devices are attached.

25 55. The medical device of claim 54, wherein a release element is operatively associated with the latch element, the release element permitting a user to selectively disengage the latch element.

30 56. The medical device of claim 54, wherein the first medical device is provided with two matable elements where one element is located on each of the first medical device housing opposite sides, and wherein the blocking means includes the latch element which extends from the first medical device  
35 housing side that is not adjacent the attached second medical device, the latch element being secured in a position which prevents a third medical device from being added to the first

medical device once the first and second medical devices are attached.

57. The medical device of claim 48, wherein the first medical  
5 device includes a transceiver, the transceiver being adapted  
to communicate with a corresponding transceiver on the second  
medical device, the transceiver and corresponding transceiver  
being aligned for communication between the medical devices  
once the first and second medical devices are attached.

10 58. A clamp mechanism for mounting a medical device to a  
support member, comprising:  
a clamp body defining a first jaw, a second jaw and an opening  
therebetween adapted to receive a support member;  
15 a clamp shaft including a forward end for extending into the  
opening, a rearward end, and an intermediate portion  
having a longitudinal axis and being mounted for axial  
movement on the first jaw of the clamp body;  
ratchet and pawl means operatively interposed between the  
20 intermediate portion of the clamp shaft and the clamp  
body, the ratchet and pawl means comprising ratchet teeth  
and a pawl;  
biasing means for yieldingly urging the pawl and ratchet teeth  
into engagement with a biasing force;  
25 the biasing means, the ratchet teeth, and the pawl being  
configured and arranged to normally resist axial movement  
of the clamp shaft in a direction away from the opening;  
and  
a release mechanism for overcoming the biasing force of the  
30 biasing means and disengaging the pawl and ratchet teeth,  
thereby permitting axial movement of the clamp shaft in  
the direction away from the opening;  
wherein the release mechanism and the pawl means are a unitary  
body.

59. A clamp mechanism in accordance with claim 58, wherein the ratchet teeth are external threads formed on the intermediate portion of the clamp shaft.

5 60. A clamp mechanism in accordance with claim 59, wherein the threads have a forward lead flank and a rear load flank, the leading flank extending rearward to form an acute angle with a longitudinal axis of the clamp shaft and the load flank extending perpendicular to the longitudinal axis of the clamp  
10 shaft.

61. A clamp mechanism in accordance with claim 58, wherein the first jaw of the clamp body has a clamp shaft receiving bore therein for slidably receiving the clamp shaft.

15 62. A clamp mechanism in accordance with claim 58, wherein the first jaw has a release bore therein and the release mechanism is an elongated pin slidably mounted in the release bore.

20 63. A clamp mechanism in accordance with claim 58, wherein the release mechanism has an adjustment slot extending therethrough for receiving the clamp shaft, the ratchet portion of the clamp shaft having threads with a major  
25 diameter and the adjustment slot having a length greater than the major diameter of the threads on the clamp shaft, the pawl being a portion of a wall of the adjustment slot having a thread thereon for matingly engaging the ratchet portion of the clamp shaft.

30 64. A clamp mechanism in accordance with claim 58, wherein the release mechanism includes a release lever pivotally mounted to the first jaw.

35 65. A clamp mechanism in accordance with claim 64, wherein the release mechanism including the release lever and pawl means are located on the exterior of the first jaw.

66. A clamp mechanism in accordance with claim 58, further comprising a hand knob attached to the second end of the clamp shaft.

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67. A clamp mechanism in accordance with claim 66, further comprising a clutch mechanism operatively interposed between the hand knob and the clamp shaft, the clutch mechanism being adapted to prevent overtightening of the clamp shaft against a pole beyond a given torque value.

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68. A clamp mechanism in accordance with claim 58, wherein the clamp mechanism is adapted to be rotatably associated with the medical device.

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69. A clamp mechanism in accordance with claim 68, wherein the clamp mechanism includes a pivot latch adapted to selectively lock the clamp mechanism in a select one of a plurality of rotational positions with respect to the medical device.

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70. A medical device in accordance with claim 47, wherein the transceivers are adapted to communicate wirelessly to with other.

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71. A medical device in accordance with claim 70, wherein the transceivers are infrared transceivers.

72. A medical device in accordance with claim 1, wherein the matable element on the first medical device includes a ramped portion allowing the matable element on the first medical device to mate with the matable element on the second medical device when said matable elements are not precisely aligned.

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73. A medical device in accordance with claim 1, wherein the matable element on the second medical device includes a tapered portion allowing the matable element on the first

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medical device to mate therewith when said matable elements are not precisely aligned.

5 74. A medical device in accordance with claim 1, wherein the matable elements are corresponding male T-slides and female T-slots.

10 75. A medical device in accordance with claim 13, wherein the matable element on the first medical device includes a ramped portion allowing the matable element on the second medical device to mate therewith when said matable elements are not precisely aligned.

15 76. A medical device in accordance with claim 13, wherein the matable element on the second medical device includes a tapered portion allowing the matable element on the first medical device to mate therewith when said matable elements are not precisely aligned.

20 77. A medical device in accordance with claim 13, wherein matable elements are corresponding male T-slides and female T-slots.

25 78. A medical device in accordance with claim 34, wherein the matable element includes a ramped portion allowing the matable element to detachably interconnect a second medical device to the first medical device when the second medical device and first medical device are not precisely aligned.

30 79. A medical device in accordance with claim 34, wherein the matable element includes a tapered portion allowing the matable element to detachably interconnect a second medical device to the first medical device when the second medical device and first medical device are not precisely aligned.

35 80. A medical device in accordance with claim 34, wherein the matable element is a T-slot.

81. A medical device in accordance with claim 48, wherein the matable element includes a ramped portion allowing the matable element to detachably interconnect a second medical device to the first medical device when the second medical device and first medical device are not precisely aligned.

82. A medical device in accordance with claim 48, wherein the matable element includes a tapered portion allowing the matable element to detachably interconnect a second medical device to the first medical device when the second medical device and first medical device are not precisely aligned.

83. A medical device in accordance with claim 48, wherein the matable element is a T-slot.